

ACTA ASTRONAUTICA

Journal of the International Academy of Astronautics

CONTENTS

Preface

Rodolfo Monti ix

I. THE TECHNOLOGIES

An overview of NASA's projected mission requirements for space nuclear systems

Gary L. Bennett, Carl B. Pilcher, William L. Smith and Douglas S. Stetson 1

Fission or fusion for Mars missions: expectations and challenges

Terry Kammash 17

Summary of the First European Conference on Space Debris

W. Flury 25

Remarks on orbital environment protection at geostationary altitude: results from long term breakup simulation

Tetsuo Yasaka 33

ISY-METS rocket experiment for microwave energy transmission

N. Kaya, H. Kojima, H. Matsumoto, M. Hinada and R. Akiba 43

Equatorial Low Orbit Communication ECO-8 System

Décio Castilho Ceballos 47

An operational flight opportunity for technological experimentation

A. Mamode and M. Subias 55

The Atmospheric Lidar instrument (ATLID)

D. Morancais, R. Sesselmann, G. Benedetti-Michelangeli and M. Hueber 63

Theoretical and experimental investigation of TSS-1 dynamics

Silvio Bergamaschi, Fabrizio Bonon, Pietro Merlini and Marco Morana 69

II. THE SYSTEMS

ARIANE 5 booster nozzle: components description and dimensioning

M. Bussière and B. Mora 83

Environmental effects on passive thermal control materials of the Space Station Freedom

C. A. Jones, K. E. David, R. J. LeVesque II and H. W. Babel 91



PERGAMON

INDEXED IN Appl. Mech. Rev., Res. Alert, Biosis Data., Cam. Sci. Abstr., Chem. Abstr. Serv., Curr. Cont./Eng. Tech. & Appl. Sci., Eng. Indx, INSPEC Data., PASCAL-CNRS Data., Curr. Cont. SCISEARCH Data., Murdoch Magazine

ISSN 0094-5765
AASTCF 34 1-404 (1994)

Diagnostic expert system for scientific satellite Ichiro Nakatani, Masashi Hashimoto, Naomi Nishigori and Mitsue Mizutani	101
The smallsatt revolution . . . back to the future? Stanley R. Sadin and Robert W. Davis	109
Reliability & reuse requirements for an economic launch system Edward L. Bangsund, Vince A. Caluori and Hal A. DiRamio	123
Space research by the Zenit rocket-space complex S. Konyukhov	133
An approach for the 3D dynamic mathematical modelization of big structures with special respect to ARIANE 5 S. Dieker	139
Odyssey, an optimized personal communications satellite system Roger J. Rusch	151
Mini-pressurized logistics module for Space Station Freedom Dino Brondolo and Joseph G. Rutter	163
Space launch systems cost estimation as design tool D. E. Koelle	175
Numerical modelization of a combustion chamber by an assembly of elementary reactors D. Capdeville, P. Hebrard and G. Lavergne	183
III. THE EXPLOITATION	
Satellite missions, global environment, and the concept of a global satellite observation information network: the role of the Committee on Earth Observation Satellites (CEOS) D. Brent Smith, David F. Williams and Akihiro Fujita	195
ESA microgravity and microdynamics activities—an overview H. R. Stark and C. Stavriniidis	205
User support to AFPM fluid science experiments during the D2 mission R. Monti, D. Castagnolo, F. Cavaliere, G. Desiderio, G. Evangelista, R. Fortezza and F. M. Sacerdoti	223
The Global Climate Observing System (GCOS) & space David L. Croom	233
New approaches to evaluate sympathoadrenal system activity in experiments on Earth and in space R. Kvetnansky, V. B. Noskov, P. Blazicek, L. Macho, A. I. Grigoriev, D. S. Goldstein and I. J. Kopin	243
Postural reactions of circulation and its regulation during simulated weightlessness V. I. Sokolov, V. A. Valyev, M. V. Kirillov and V. A. Gornago	255
Particle motion in the fluid experimental system in microgravity J. Sun, F. M. Carlson, L. L. Regel, W. R. Wilcox, R. B. Lal and J. D. Trolinger	261

IV. SPACE POLICIES

Issues in space segment regulation in the European Community

Paul Verhoef 271

European co-operation in the operations and communications infrastructure

Herwig A. Luae 279

Methodology and results of a space station education pilot programme in the primary school

G. Mirra and C. Mirra 289

Spacelab program's scientific benefits to mankind

Harry G. Craft Jr and Richard A. Marmann 297

Near-term U.S. military and commercial launch systems—a post Cold War assessment of future needs

C. L. Whitehair and M. G. Wolfe 307

Reorganization of the FSU space program and its influence on worldwide space activities

Maxim V. Tarasenko 327

Status of international cooperation and East-West information exchange

Barbara Lawrence and Adam Bernacki 337

Social impact of space debris: study of economic and political aspects

H. Yoshida and M. Araki 345

Cost considerations for interstellar missions

Dana G. Andrews 357

Scientific and legal aspects of space debris

Carl Q. Christol 367

Rocket center Peenemünde—personal memories

Konrad Dannenberg and Ernst Stuhlinger 385

J. Preston Layton 1919–1992: a guiding light in nuclear space power and propulsion

Yvonne C. Brill 397



PERGAMON

INDEXED IN Appl. Mech. Rev., Res. Alert, Biosis Data., Cam. Sci. Abstr., Chem. Abstr. Serv., Curr. Cont./Eng. Tech. & Appl. Sci., Eng. Indx, INSPEC Data., PASCAL-CNRS Data., Curr. Cont. SCISEARCH Data., Murdoch Magazine

ISSN 0094-5765
AASTCF 34 1-404 (1994)

